

Semantic Terminology Services: Experiences from the FACET Project

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Presentation

- NKOS overview
- FACET Project
 - Semantic expansion
 - Standalone system
 - Qualitative evaluation
 - Web Demonstrator
- Lessons learned
 - Need for standards
- Future work
 - Semantic expansion service
- References

Taxonomy of Knowledge Organisation Systems

Term Lists

Authority Files, Glossaries, Gazetteers, Dictionaries

Classification and Categorization

Subject Headings

Classification Schemes and Taxonomies

eg DDC, scientific taxonomies

Relationship Schemes

Thesauri

Semantic Networks (eg WordNet)

(Ontologies)

Semantic KOS

Thesauri

3 Standard Relationships between concepts (Aitc00)

Equivalence, Hierarchical, Associative

Inherent domain lexicon (lead-in vocabulary)

Concept definitions and warrant (Scope Notes)

Ontologies

Higher level conceptualisation (McGu02, Noy)

formal definition of relationships

inference rules and definition of roles (sometimes)

KOS an element of ontologies and schemas

Jaco03, Ontologies and the Semantic Web,.

ASIST Bulletin, April/May 2003, *Special Issue on Semantic Web*

Terminology Services from Koch04 Structured Overview - Activities to advance the powerful use of vocabularies

Searching for concepts

- schemes in registries

- concepts/terms in taxonomy servers

Search support for queries

- collection finding

- cross-searching, cross-browsing, mapping services

- KOS browsing and user interface/visualisation

- query expansion, disambiguation

- automatic indexing and classification

- extraction/mining of terms

- translation support using vocabularies

FACET: faceted knowledge organisation for semantic retrieval

University of Glamorgan, Science Museum

KOS creation and maintenance

faceted, multi-concept bestmatch search

Mapping, merging vocabularies

semantic expansion as browsing service

Document creation and maintenance

Indexing, classification, annotation

faceted thesaurus search interface

intellectual, automatic

standalone and Web demonstrators

Discovery of services and databases/collections

Searching for concepts --> controlled terminology, auto-disambiguation

Querying and result display

Cross-searching, cross-browsing, mapping services

KOS browsing and user interface/visualisation

Query expansion

Extraction/mining of terms

Translation support using vocabularies

Content integration and mediation

Recent Sources

NKOS: Networked Knowledge Organization Systems/Services

<http://jodi.ecs.soton.ac.uk/?vol=4&iss=4> *NKOS JoDI Special Issue*

<http://www.multites.com/conference03.htm> *MultiTes Conference*

<http://nkos.slis.kent.edu/> *JCDL and ECDL Workshops 2003*

<http://www.lub.lu.se/SEMKOS/> *SEMKOS IP Proposal Resources*

<http://www.digicult.info> *Cultural Heritage review site*

Semantic Web - RDF/XML, RDF Schema, Metalog, OWL

<http://www.w3.org/2001/sw/> *W3C Semantic Web Activity*

<http://www.semanticweb.org/>

<http://ontoweb.aifb.uni-karlsruhe.de/> *OntoWeb*

<http://www.w3c.rl.ac.uk/SWAD/thesaurus.html> *SWAD-Europe Thesaurus index*

Semantic Grid - Semantic Web, Web service, eScience, GRID links

<http://www.semanticgrid.org/>

<http://www.w3.org/2002/ws/> *W3C Web Services Activity*

<http://www.ariadne.ac.uk/issue29/gardner/intro.html> *Gardner's Intro to Web Services*

<http://www.ukoln.ac.uk/events/jisc-terminology/> *JISC Terminology Services Workshop*



FACET - Faceted Access to Cultural hEritage Terminology

***FACET - a collaborative project investigating the potential of
semantic term expansion in retrieval***

Aims:

- Integration of thesaurus into the interface
- Semantic term expansion and matching function
taking advantage of facet structure

<http://www.comp.glam.ac.uk/~FACET/>

FACET Collaborators

- Research Council Funding: EPSRC 3 years
- National Museum of Science and Industry (NMSI):
National Railway Museum and Science Museum Collections Database
- J. Paul Getty Trust
Art and Architecture Thesaurus (AAT)
- Museum Documentation Association (MDA)
Railway Thesaurus
- Canadian Heritage Information Network (CHIN)
Advisors

The Thesaurus in Retrieval

- a) as a *search thesaurus* with a (web) *free text* search engine resource for query refinement (interactive or automatic)
- b) searching and indexing with *controlled vocabulary* indexed datasets
 - immediate application area of FACET project

In searching, thesaurus relationships conventionally used to
expand synonyms
include narrower terms in a query

-- but can also be used in more general **semantic term expansion**

Semantic Term Expansion

Reasoning over thesaurus semantic relationships allows the system to play an active role

- Ranking of matching items in a result set
- Automatic suggestion of terms to be considered for query
- Query reformulation and 'more like this' option
- Augmented Browsing tools – semantic expansion

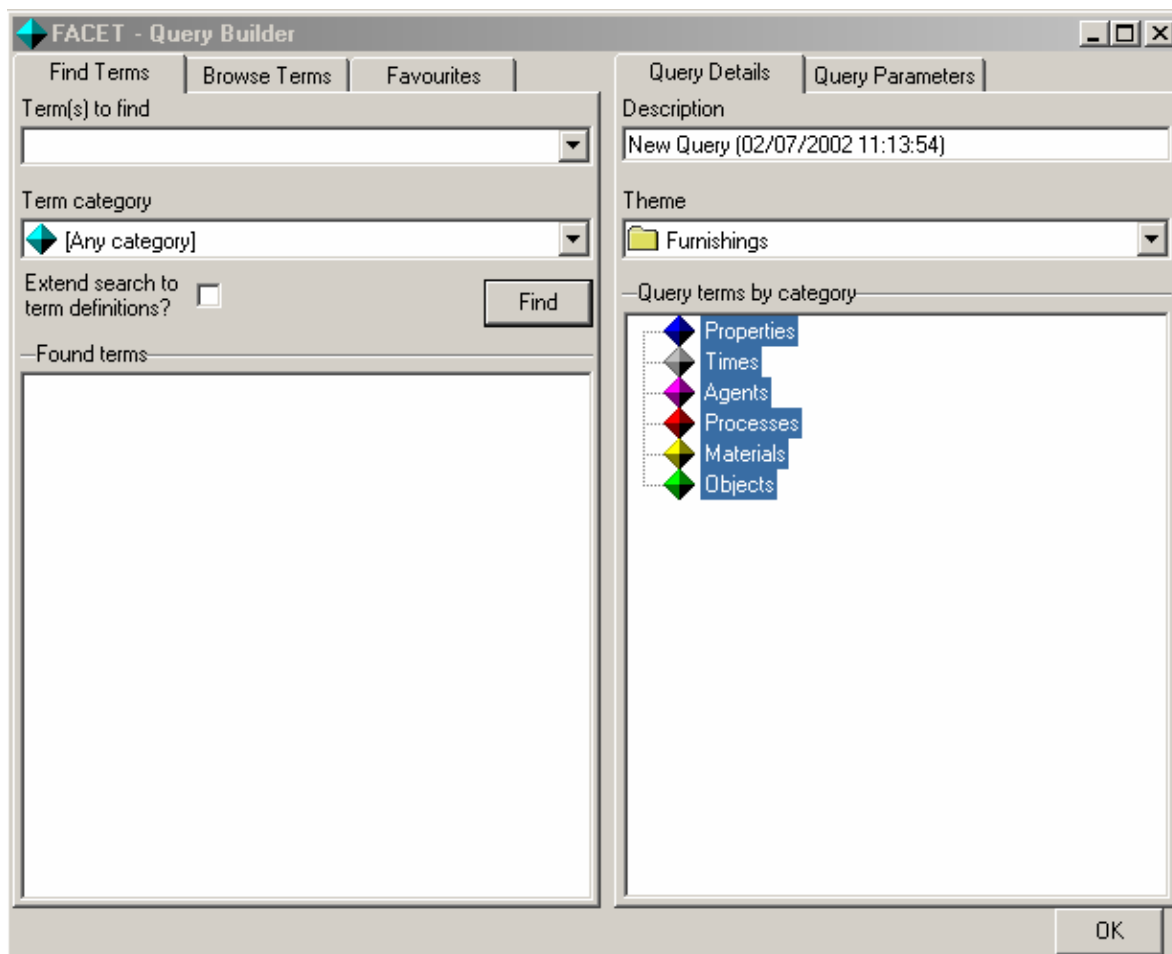
Underpinning technologies:

- Measures of distance over the semantic index space
- Matching Function for sets of terms

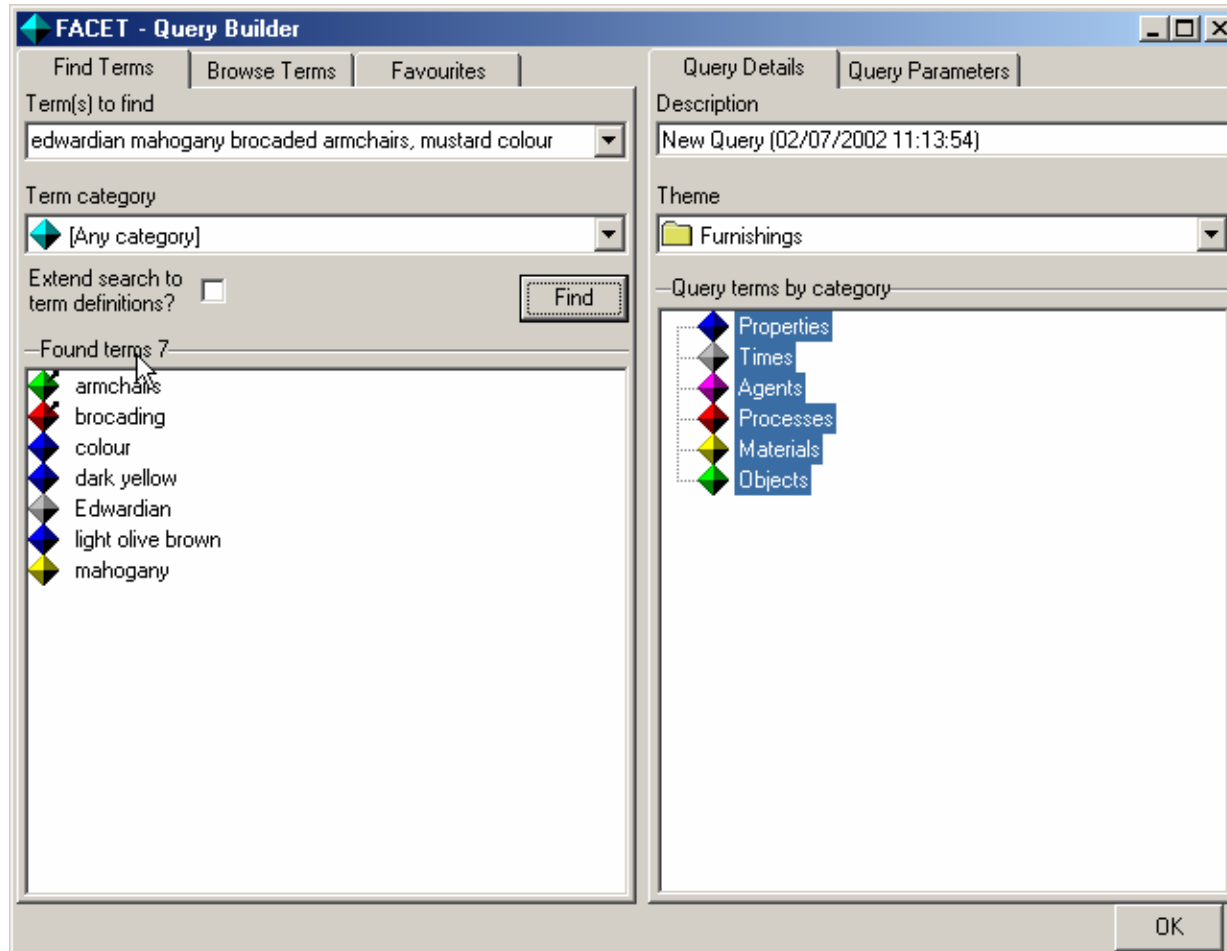
FACET Prototype

- SQLServer database: collections DB and Thesaurus
- C++ thesaurus term expansion engine
- Dual thesaurus representations
 - database
 - in-memory data structure
- Visual Basic and Web client interfaces
 - ‘Find Term’ mapping to terms, alternates, scope notes
 - Browse hierarchies
 - Semantic browsing
 - Query Builder
 - Ranked results

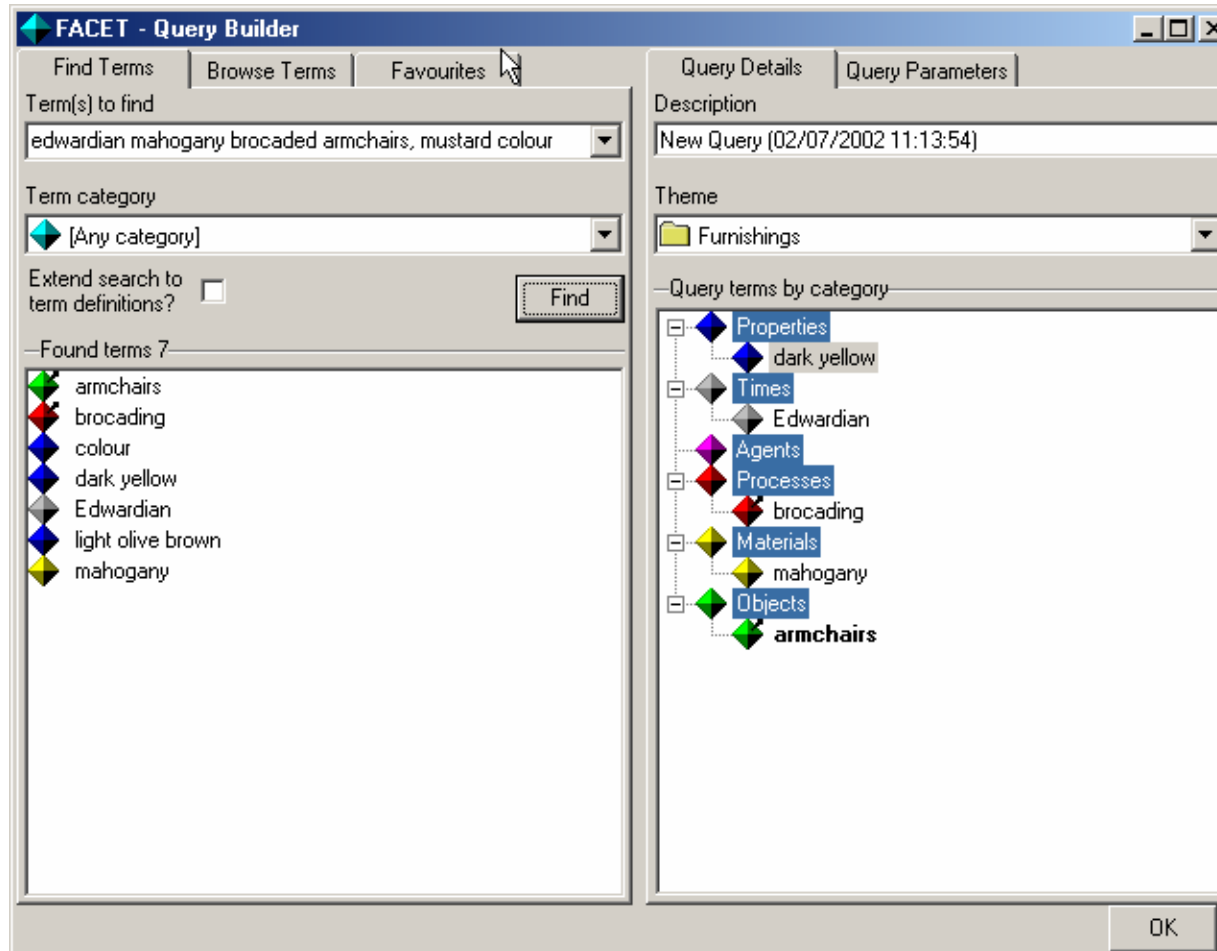
Finding Thesaurus Terms



Adding Terms to the Query



Thesaurus Browser in Query Builder



Faceted Knowledge Organisation Systems

Faceted classifications based on primary division
into fundamental, high-level categories (facets)

Compound descriptors (multi-concept headings) are synthesised
by combination of terms from limited number of fundamental facets

In constructing AAT, adjectival noun phrases very common:

e.g. painted oak furniture

“Rather than enumerate the nearly infinite number of object and
subject descriptions needed by thesaurus users, the AAT decided to
pursue the building blocks of these descriptors in the form of a faceted
vocabulary”

(Guide to Indexing and Cataloging with the Art & Architecture Thesaurus)

Compound Descriptors

e.g. painted oak furniture

- Multi-concept subject headings allow highly specific descriptions and offer promise of precise queries
- However practical focus has tended to be on cataloguing rather than searching
- Poses problems for recall in retrieval and for browsing.
Full potential yet to be exploited in retrieval

Matching Problem

“The major problem lies in developing a system whereby individual parts of subject headings containing multiple AAT terms are broken apart, individually exploded hierarchically, and then reintegrated to answer a query with relevance”

(Toni Petersen, AAT Director)

Query: mahogany, dark yellow, brocading, Edwardian, armchair

Descriptor: oak, light yellow, crests, ovals, brocade, Victorian, Carver chair

Potentially extra / missing / partially and non-matching terms


Matching Problem

“The major problem lies in developing a system whereby individual parts of subject headings containing multiple AAT terms are broken apart, individually exploded hierarchically, and then reintegrated to answer a query with relevance”

(Toni Petersen, AAT Director)

Query: mahogany, dark yellow, brocading, Edwardian, *armchair*

focus term



must match after expansion

Descriptor: oak, light yellow, crests, ovals, brocade, Victorian, Carver chair

Potentially extra / missing / partially and non-matching terms

Facet Queries with Results

FACET - Faceted Access to Cultural hEritage Terminology

Query View Help

New Open Run Print Help

Theme	▲ Query Description	Query Terms
Furnishings	Leather chairs from Edwardian period	armchairs,upholstering,leather,Edwardian
Space and Astronomy	Navigational instruments	sextants,navigation instruments
Furnishings	New Query (02/07/2002 11:13:54)	armchairs,brocading,dark yellow,Edwardian,mahogany
[Unknown]	New Query (03/07/2002 12:07:48)	Edwardian,armchairs,upholstering
Furnishings	New query based on object 1986-7813	brocade,oak,Victorian,upholstering
Furnishings	Query based on object 1984-7072	light yellow,Edwardian,floral patterns,upholstering,mahog...

ID	▼ Match	Index Terms	Collection	Object Descrip ▲
1984-7072	69%	light yellow,Edwardian,floral patterns,green (color),u...	NRM - Railway Furniture	Carver Chair, G.N.R.
1984-7075	69%	floral patterns,green (color),mahogany,Edwardian,up...	NRM - Railway Furniture	Carver Chair, Great N...
1975-7308	56%	brocade,crests,oak,Victorian,ovals,Carver chairs	NRM - Railway Furniture	Carver chair, Oak wil...
1984-7077	43%	upholstering,cloth,wood,dark yellow,armchairs	NRM - Railway Furniture	Armchair, British Tra...
1988-7325	36%	light yellow,patterns (design elements),upholstering,b...	NRM - Railway Furniture	Armchair, LNWR, W...
1988-7334	33%	Carver chairs,ovals,Queen Anne Style,wood,carving...	NRM - Railway Furniture	Chair, Wooden carve...
1988-7335	33%	embossing,leather,wood,carving,brown,motifs,Quee...	NRM - Railway Furniture	Carver Chair, Woode...
1986-7774	32%	upholstering,deep yellow,blue,armchairs	NRM - Railway Furniture	Armchair, LNER, Blu...
1986-7777	32%	blue,deep yellow,moquettes,armchairs,basket chairs	NRM - Railway Furniture	Armchair, Basketry c...
1975-7309	30%	moquettes,upholstering,curved,wood,buttoning,blue...	NRM - Railway Furniture	Armchair, Upholstere...
1986-7794	30%	buttoning,crests,carving,leather,patterns (design ele...	NRM - Railway Furniture	Armchair, MS & LR, C...
1986-7797	30%	upholstering,leather,wood,green (color),armchairs	NRM - Railway Furniture	Armchair, Pullman, st...
1986-7802	30%	moquettes,wood,light grayish brown,brown,armchairs	NRM - Railway Furniture	Armchair, Brown & be...

23 Result items

Qualitative Evaluation

- **Formative evaluation**

Analyse at a micro level user interaction in order to illuminate problems

Multiple data sources

transcripts of think-aloud sessions

screen capture movie files

user action logs

observer notes

- **Issues**

Allocation of search functionality to sub-windows – reduced number sub-windows

Standalone FACET 2

Need for integrated Query Builder tool providing more feedback on facet structure

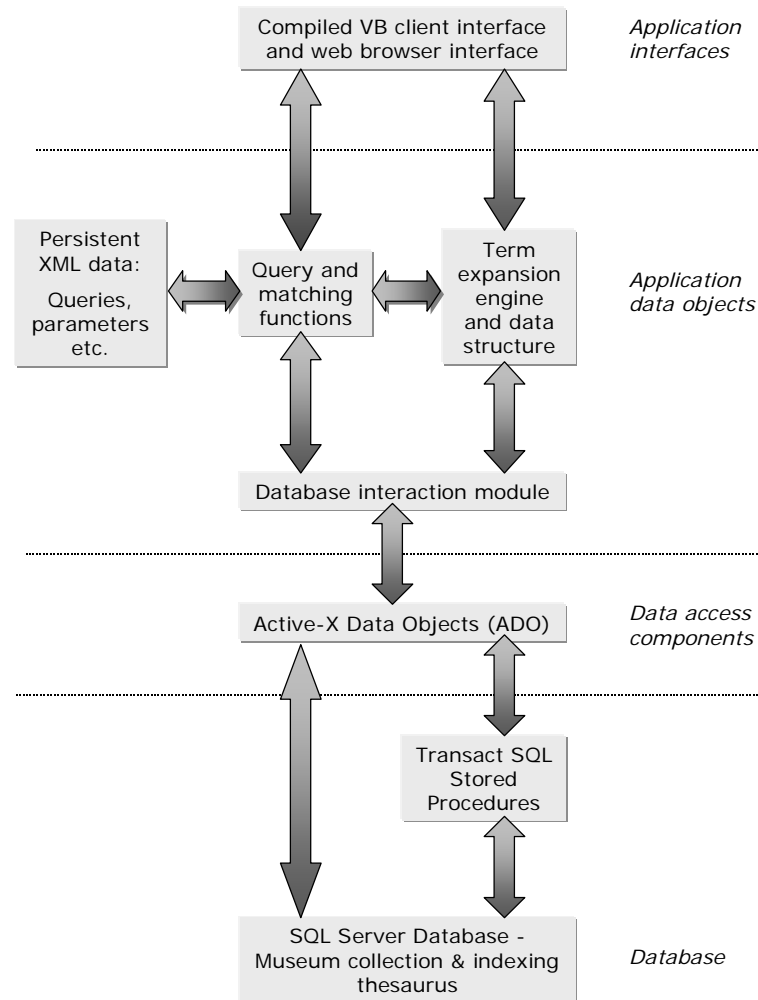
Introduce notion of focus term in query to avoid distortion on expanding minor terms

Web Demonstrator

individual term expansion control

slider bar inappropriate control

System Architecture



FACET Web Demonstrator

- illustrates thesaurus content and semantic expansion in a fairly realistic Web prototype application
- Intended more as an exploration of FACET research outcomes as dynamically generated Web components than a general interface but suggestive of possible interface components
- Not rely on pre-built static HTML pages - thesaurus content is generated dynamically

Both the KOS terminology service (the AAT) and the collections data reside on the same server - in general need not be so

<http://www.comp.glam.ac.uk/~FACET/webdemo/>

FACET Web Demonstrator implementation

- Current browser-based interface is an Active Server Pages (ASP) application, using a combination of server-side scripting and compiled components
- Persistence of state information between page requests a problematic issue - HTTP protocol is (by design) stateless
- Solution adopted for current demonstrator involved small 'scriptlet' interface components to communicate with server without causing a browser to refresh the entire page.
- But side effect of introducing some (IE) platform dependence

The FACET Project

[Home](#) | [Demonstrations](#) | [Publications](#)

Demonstration - Query Builder (instructions)

- Legend**
- Properties
 - Times
 - Agents
 - Processes
 - Materials
 - Objects

[Find in Thesaurus](#)
[View Hierarchy](#)
[View Expansion](#)
[Add to Query](#)

Objects...
 Furnishings...
 furnishings...
 <furnishings by form or function>...
 furniture...
 <furniture by form or function>...
 <storage and display furniture>...
 case furniture...
 chests...
 cellerets
 arcae
 chests with drawers
 cassoni
coffers (furniture)...

coffers (furniture)
 Small chests for the storage of valuables which may also serve as seats or tables.
 (Variations: coffer (furniture); Chests; coffers; coffres; coffrets)

See also [arks](#)

Query Terms [Run Query](#)

burnishing (polishing) [Remove](#)

Term Expansion

Min Max

ebony [Remove](#)

Term Expansion

Min Max

coffers (furniture) [Remove](#)

Term Expansion

Min Max

Public Request for Info to Science Museum

- ***“eighteenth century European celestial navigation instruments”***
- At the time, this request highlighted difficulties with existing techniques
- multiple queries to several fields in database required,
- Semantic expansion on *navigation instruments* short-cuts this process.
Items from the collection indexed by *sextants, astrolabes, etc.* now result from a single query.

Public Request i

The screenshot shows a web browser window titled "FACET - Faceted Access to Cultural Heritage Terminology - Tiscali 10.0". The address bar contains the URL: http://rapid.isd.glam.ac.uk/FACET/live/demo_QueryBuilder.asp#. The page header reads "The FACET Project" with navigation links for "Home", "Demonstrations", and "Publications".

The main content area is titled "Demonstration - Query Builder (instructions)". On the left, a "Legend" box lists categories: Properties, Times, Agents, Processes, Materials, and Objects. The central interface includes four buttons: "Find in Thesaurus", "View Hierarchy", "View Expansion", and "Add to Query".

The "View Expansion" panel displays a list of terms with checkboxes: sextants, navigation instruments, astronomical instruments, quadrants, octants, inclinometers, cross-staffs, clinometers, clinographs, astrolabes, and scientific instruments. The "sextants" term is selected. Below this list, a detailed definition is provided: "sextants: Astronomical instruments that measure angular distances, especially the altitude of celestial bodies, in order to determine the longitude and latitude of ships at sea. (Variations: sextant)". A "See also" section lists "astronomical instruments, navigation instruments".

The "Query Terms" panel on the right shows a list of selected terms: "quadrants, octants, inclinometers, cross-staffs, clinometers, clinographs, astrolabes". A "Run Query" button is present. Below the list, a "Term Expansion" section features radio buttons for "Min" and "Max", with "Max" selected.

At the bottom of the interface, a status message reads: "145 matching items found. Only the top 100 items are displayed." The Windows taskbar at the bottom shows the start button, ZoneAlarm, Windows Explorer, Internet Explorer, Outlook, Microsoft PowerPoint, and a folder named "DTall-digicult...". The system clock indicates the time is 18:55.

Public Request ii

Address http://rapid.isd.glam.ac.uk/FACET/live/demo_QueryBuilder.asp#

(Variations: sextant)

See also [astronomical instruments](#), [navigation instruments](#)

673	Time Measurement	astronomical instruments , water clocks , clock towers , model , hydraulic structures , astronomy , chronology (discipline) , reproductions , astronomical clocks	Model (see 2176) of the Chinese Astronomical Clock-Tower of 1088, built on the initiative of Su Sung
10773261	Time Measurement	holders , astronomical instruments , bronze	Astronomical instrument (Merkhet) from ancient Egypt
574804	NRM - Tools of the Trade & Personal Accessories	clinometers	Clinometer, 'Abney's Level', used for measuring railway track grades, in fitted leatherette case, by Newton & Co., London, c. 1880.
209578	NRM - Tools of the Trade & Personal Accessories	clinometers	Clinometer, instrument for checking that signal arms were horizontal when in stop position, London Midland & Scottish Railway, in tin case marked LMS.
	Wellcome (general)	brass (alloy) , astrolabes	Brass planispheric astrolabe, 22 stars on rete, Rojas projection on back, Italian, dated 1572

The Query Builder amalgamates the [Term Finder](#), [Term viewer](#), [Query terms](#) and [Query results](#) sections into a single interactive screen. The aim is to explore multi concept matching, as described in the [overview](#). Follow the instructions detailed below to build and execute a multi concept query:

1. Type a term or phrase (e.g. 'brocade mahogany victorian armchair') to look for into the term finder box and then click on *find terms* to search for controlled vocabulary terms in the thesaurus.
2. Any matching terms are displayed in the box on the left side of the screen. You can click on a term to see its contextual position in the thesaurus.
3. Once you have found an appropriate term and clicked on it to view its position in the thesaurus, use the *Add to Query* button to add the

start ZoneAlarm Windows ... Internet E... Inbox - Outlo... Microsoft Pow... DTall-digicult... EN 18:56

Public Request iii

The screenshot displays the FACET (Faceted Access to Cultural Heritage Terminology) web application interface. The browser window title is "FACET - Faceted Access to Cultural Heritage Terminology - Tiscali 10.0". The address bar shows the URL: http://rapid.isd.glam.ac.uk/FACET/live/demo_QueryBuilder.asp#. The interface includes a menu bar (File, Edit, View, Favorites, Tools, Help) and a toolbar with navigation and search icons.

The main content area is divided into several sections:

- Faceted Search Results:** A list of search facets is shown on the left. The selected facet is "armillary spheres", which is expanded to show sub-facets: "celestial globes" and "globes (cartographic spheres)".
- Term Expansion:** A section on the right titled "Term Expansion" shows the selected term "armillary spheres, celestial globes, globes (cartographic spheres), terrestrial globes" with a "Remove" button. Below it, there are radio buttons for "Min" and "Max", with "Max" selected.
- Search Results List:** A table of search results is displayed at the bottom. It indicates "103 matching items found. Only the top 100 items are displayed." The table has columns for Match, Reference, Collection, Index Terms, and Description.

Match	Reference	Collection	Index Terms	Description
580661	Astronomy	armillary spheres	Copernican armillary sphere from set of two armillary spheres and a celestial globe constructed in paper on pasteboard with metal fitments supported on a decorative mahogany baluster base. Shows planets out to Uranus, plus four asteroids, Ceres, Pallas, Juno & Vesta, first quarter 19th century.	
580577	Astronomy	armillary spheres	Ptolemaic armillary sphere from a set of two armillary spheres and a celestial globe constructed in paper on pasteboard with metal fitments supported on a decorative mahogany baluster base, early 19th century.	

The Windows taskbar at the bottom shows the Start button, several open applications (ZoneAlarm, Windows Explorer, Internet Explorer, Outlook, Microsoft PowerPoint, and a document titled "DTall-digicult..."), and the system tray with the date and time (19:05).

Public Request iv

The screenshot shows a web browser window titled "FACET - Faceted Access to Cultural Heritage Terminology - Tiscali 10.0". The address bar shows the URL: http://rapid.isd.glam.ac.uk/FACET/live/demo_QueryBuilder.asp#. The interface is divided into several sections:

- Objects...:** A tree view showing a hierarchy of terms: "Information Forms..." > "<information forms>..." > "<information artifacts>..." > "<information artifacts by physical form globes (cartographic spheres)... celestial globes..." > "armillary spheres".
- Selected Term:** "armillary spheres, celestial globes, globes (cartographic spheres), terrestrial globes" with a "Remove" button.
- Term Expansion:** Radio buttons for "Min" and "Max", with "Max" selected.
- Description:** A text box containing the definition: "Skeleton models of the celestial sphere, generally having the earth at the center, consisting of a framework of rings depicting the relative position of such astronomical elements as the celestial equator, the ecliptic, the zodiac, and the planets; developed by the ancient..."
- Results:** A table showing 103 matching items found. Only the top 100 items are displayed.

Match	Reference	Collection	Index Terms	Description
■	580661	Astronomy	armillary spheres	Copernican armillary sphere from set of two armillary spheres and a celestial globe constructed in paper on pasteboard with metal fittings supported on a decorative mahogany baluster base. Shows planets out to Uranus, plus four asteroids, Ceres, Pallas, Juno & Vesta, first quarter 19th century.
■	580577	Astronomy	armillary spheres	Ptolemaic armillary sphere from a set of two armillary spheres and a celestial globe constructed in paper on pasteboard with metal fittings supported on a decorative mahogany baluster base, early 19th century.
■	76859	Astronomy	armillary spheres	A set of two armillary spheres and a celestial globe

The Windows taskbar at the bottom shows the Start button, ZoneAlarm, Windows Explorer, Internet Explorer, Outlook, Microsoft PowerPoint, and a folder named "DTall-digicult...". The system clock shows 19:10.

Some lessons learned

- Web demonstrator our first step in exploring issues underlying networked access to KOS
- Results from FACET show that bestmatch (ranked result) approaches can be applied to KOS-based queries via semantic expansion of query terms
- Web interface also showed semantic expansion can also be employed as a browsing tool when wishing to hide some complexity of hierarchical structures

Critical issue - Standards

Ongoing initiatives to revise thesaurus standards

ANSI/NISO Z39.19

BS 5723 and BS 6723 - Dext03

BSI public draft soon, extended scope, interoperability

Thesaurus Representations

RDF - SWAD03; Topic Map - Ligh03; various XML

Possibilities to extend current relationships by specialisation,
enriching standards but maintaining compatibility

KOS Service Protocols - Bind04

NKOS Registry - Vizi01; MEG Registry Project

KOS integration into DL services

from Hill02 Research Agenda KOS/DL

Taxonomy of KOS - KOS types linked to DL service protocols

Registries of KOS and KOS-level metadata to represent them

XML/RDF KOS representations - customisable

Core set of relationship types across all KOS

General KOS service protocol

from which protocols for specific types of KOS can be derived

Robust linking model in which DL entities (collections, objects, and services) can refer to KOS entities (concepts, labels, and relationships)

Visualization tools that fully use and display the rich semantics embedded in KOS

Lessons learned ii

- Critical issue facing KOS in Web is existing standards based in print world and not concerned with data interchange formats.
- Programmatic access requires commonly agreed protocols building on lower-level standards, such as Web services.
- The development of common KOS representation formats and service protocols are closely linked. Progress needs to be made on both dimensions if standards are to be achieved.
- A service protocol should be expressed in terms of a well defined but extensible set of KOS data elements and relationships, with the relationship type a parameter to the protocol commands. This would allow the specialisation of the current thesaurus relationships.

Lessons learned iii

- Trend towards service oriented architectures brings opportunity of clearer separation of interface components from underlying data sources, via use of appropriate (Web) services
- Basing distributed protocol services on atomic elements of thesaurus data structures and relationships would limit possible interfaces (too many protocol requests to server)
- Web interfaces offering advanced thesaurus services require protocols which group primitive thesaurus data elements (via their relationships) into *composites*, to achieve reasonable response rate.

How far to formalise KOS?

Thesaurus a long-lived, pragmatic and useful tool

includes semantics, domain lexicon (UF/ALTs, Scope Notes)

cost-effective granularity of relationships for many search apps

where results are based on probable relevance judgements

Cost/benefit issues in extent of KOS formalisation

Application domain dependent level of precision in concept use

Indexer - Searcher variation in applying concepts

Formalisation depends on how applications process concepts

Existing KOS already have rich resources to offer,

not withstanding future semantic web developments

which will tend to be more resource intensive

Some current work on semantic DL approaches

- FACET → WebFACET → **InterFACET**
- Next phase of work looks at common KOS representation formats and API protocols - making content available via programmatic interfaces.
- portable, platform neutral, open-source code
- One focus: ***semantic expansion as a service***
 - possible KOS protocol element?

yields

- different configurations of KOS displays by single function call
- novel alternative interfaces, such as navigation via semantic expansion
- Automatic expansion of query terms for various ranked result (best match) query services
- Term suggestion facilities to assist in document indexing applications

Current work examples

- Import (currently extract just semantic-structural parts)
 - AAT-REC format files (Getty format)
 - MultiTes CSV export format files
 - SKOS-Core format files

AAT, ADL Feature Type Thesaurus

EIONET-GEMET thesaurus (SKOS-Core format)

- into expansion module and perform semantic expansion
- Export to SKOS-Core (approx) format files

Current work examples – AAT SKOS RDF export

```
<skos:Concept rdf:about="201687">
<skos:prefLabel>sextants</skos:prefLabel>
<skos:related rdf:resource="256965" />
<skos:altLabel>sextant</skos:altLabel>
<skos:broader rdf:resource="196710" />
<skos:related rdf:resource="24497" />

</skos:Concept>
<skos:Concept rdf:about="195790">
<skos:prefLabel>astrolabes</skos:prefLabel>
<skos:altLabel>astrolabe</skos:altLabel>
<skos:broader rdf:resource="196710" />
<skos:related rdf:resource="24497" />
</skos:Concept>
```

```
<skos:Concept rdf:about="24497">
<skos:prefLabel>astronomical
instruments</skos:prefLabel>
<skos:related rdf:resource="251656" />
<skos:related rdf:resource="201687" />
<skos:related rdf:resource="54534" />
<skos:related rdf:resource="195790" />
<skos:related rdf:resource="196040" />
<skos:related rdf:resource="199777" />
<skos:altLabel>astronomical
tools</skos:altLabel>
...
</skos:altLabel>
<skos:broader rdf:resource="122283" />
<skos:related rdf:resource="25789" />
</skos:Concept>
```


Current work examples – sextants expanded

1.000		sextants
0.697	\BT	<vertical angle measuring devices>
0.611	\RT	astronomical instruments
0.611	\RT	navigational instruments
0.522	\RT\UF	instruments, astronomical
0.522	\RT\UF	astronomical instrument
...		
0.477	\BT\NT	clinographs
0.477	\BT\NT	clinometers
0.477	\BT\NT	quadrants
0.477	\BT\NT	cross-staffs
0.477	\BT\NT	octants
0.477	\BT\NT	inclinometers
0.477	\BT\NT	astrolabes
0.390	\BT\NT\UF	cross-staff
0.390	\BT\NT\UF	inclinometer
0.390	\BT\NT\UF	staffs, Jacob's
0.390	\BT\NT\UF	Jacob's staffs

Current work – GEMET example expanded

1.000		landslide
0.591	\BT	geomorphic process
0.357	\BT\NT	avalanche
0.357	\BT\NT	erosion
0.169	\BT\RT	geological process
0.169	\BT\BT	land

*Idea is a semantic expansion service
which an application might use for
browsing display
query expansion
indexing suggestions, etc*

NKOS Workshop at ECDL 2004

- NKOS Workshop –
User-centred approaches to NKOS

ECDL 2004, Bath, UK, 16 September

see <http://www2.db.dk/nkos-workshop/>

- Selected papers from the NKOS workshop
will be considered for forthcoming special issues
of journal NRHM

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References

- Aitchison J., Gilchrist A., Bawden D. 2000. Thesaurus construction and use: a practical manual (4th edition). London: ASLIB.
- Binding C., Tudhope D. 2004. KOS at your Service: Programmatic Access to Knowledge Organisation Systems. JoDI 4(4), <http://jodi.ecs.soton.ac.uk/Articles/v04/i04/Binding/>
- Blocks D., Binding C., Cunliffe C., Tudhope D. 2002. Qualitative evaluation of a thesaurus-based retrieval system. Proc. ECDL 2002, 346-361. LNCS. © Springer-Verlag.
<http://www.glam.ac.uk/soc/research/hypermedia/publications/presentationdocs/ecdl.pdf>
- Dextre Clarke S. 2003. BS 8723 : a new British Standard for structured vocabularies.
http://www.glam.ac.uk/soc/research/hypermedia/NKOS-workshop%20Folder/dextre_clarke.ppt
- FACET Project. <http://www.comp.glam.ac.uk/~FACET/>
- FACET Web demonstrator. <http://www.comp.glam.ac.uk/~FACET/webdemo/>
- Hill et al. 2002. Integration of Knowledge Organization Systems into Digital Library Architectures. ASIST SigCR - http://www.lub.lu.se/SEMKOS/docs/Hill_KOSpaper7-2-final.doc
- Hodge Gail, 2000. Systems of Knowledge Organization for Digital Libraries: Beyond Traditional Authority Files. CLIR Pub91. April 2000. <http://www.clir.org/pubs/abstract/pub91abst.html>
- Jacob Elin. 2003. Ontologies and the Semantic Web. ASIST Bulletin, April/May 2003, Special Issue on Semantic Web. <http://www.asis.org/Bulletin/Apr-03/BulletinAprMay03.pdf>
- Koch T. Activities to advance the powerful use of vocabularies in the digital environment - Structured overview. <http://www.lub.lu.se/~traugott/drafts/seattlespec-vocab.html>
- Light R. 2003. XML (and Topic Maps). <http://www.richardlight.org.uk/thesauri/thesauri.htm>
- McGuinness D. 2002. Ontologies Come of Age. In: (Fensel et al eds.) Spinning the Semantic Web: Bringing the World Wide Web to Its Full Potential. MIT Press.
- MultiTes 2003. Conference on Thesauri and Taxonomies <http://www.multites.com/conference03.htm>

References ctd.

NKOS: Networked Knowledge Organization Systems/Services, <http://nkos.slis.kent.edu/>

NKOS 2003. Workshop ECDL. <http://www.glam.ac.uk/soc/research/hypermedia/NKOS-Workshop.php>

NKOS 2004. New Applications of Knowledge Organization Systems. NKOS Special Issue, JoDI.
<http://jodi.ecs.soton.ac.uk/?vol=4&iss=4>

Noy N., McGuinness D. Ontology Development 101: A Guide to Creating Your First Ontology.
http://protege.stanford.edu/publications/ontology_development/ontology101-noy-mcguinness.html

Soergel D. The representation of Knowledge Organization Structure (KOS) data: a multiplicity of standards.

<http://www.glam.ac.uk/soc/research/hypermedia/publications/SoergelNKOS2001KOSStandards>

SWAD-Europe Thesaurus Activity. <http://www.w3.org/2001/sw/Europe/reports/thes/>

Tudhope D., Binding C., Blocks D., Cunliffe D. 2002. Compound Descriptors in Context: A Matching Function for Classifications and Thesauri. Proc. JCDL 2002, 84-93.

<http://www.glam.ac.uk/soc/research/hypermedia/publications/jcdl02.pdf>

Vizine-Goetz D. 2001. NKOS Registry - draft proposal for KOS-level metadata.

http://staff.oclc.org/~vizine/NKOS/Thesaurus_Registry_version3_rev.htm

Extract from Collated Transcript

Notation indicates data source

The user searches the thesaurus for “text”:

52:08.1Thesaurus form: Click “Find now”Text

The user then adds “text” to the query. After this, he looks at the related terms, and drags the (only) related term (“words”) also into the query. The user executes the query.

53:06.4Query form: QueryStartStart Query: Text, Words

53:12.0Query form: Results: 3

Three records come up as a result:

IDMatchCollectionDescription

The user looks at the first record. The indexing terms are: cast iron, embossing, inlays, lettering (layout features), seating, wood.

53:57.0Catalogue record: Activate window

Participant: Right, okay, so you’ve got the words “embossing”. Ah, okay. That’s just a different tense, isn’t it? ... Participant: So I can now try that and see if it will get me anything more.